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TITLE : METHOD FOR FORMING TITANIA FILM

ABSTRACT : PROBLEM TO BE SOLVED: To prepare a liquid raw material for a titania film having high chemical stability and free from by-production of toxic substances in drying or heat-treatment and to synthesize a crystalline titania film having high adhesivity and relatively high density at a low temperature.

SOLUTION: A liquid containing titanium oxide is synthesized by reacting hydrogen peroxide solution with titanium hydroxide gel prepared from a titanium solution and a basic solution and heating the produced liquid at $\geq 80^{\circ}\text{C}$. A titania film is produced by applying and drying the liquid or heat-treating the applied and dried liquid. A crystalline titania thin film having relatively high density can be synthesized by the drying or the low-temperature heat-treatment without producing harmful substance in the drying and baking procedures. The liquid for the preparation of the titania film is neutral and applicable to various materials and has a stability remarkably high compared with conventional preparation liquid. A titania film having excellent acid resistance, photocatalytic activity, etc., can be produced even at a temperature as low as 300°C . A dense film of $\geq 1\mu\text{m}$ thick can be produced by a single coating procedure.

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